

TRENDS IN TUITION ASSISTANCE USAGE BY ACTIVE DUTY MILITARY MEMBERS
AT FOR-PROFIT COLLEGES AND UNIVERSITIES

by
Michael Chimienti

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Abstract

Studies of veteran education benefits typically focus on the rates of GI Bill usage and dollar amounts collected, while also observing resultant employment and earnings data. There is a lack of research on Tuition Assistance (TA) trends of active duty military members. In addition, studies of usage patterns at for-profit institutions are lacking. Despite recent legislation protecting military members from the predatory practices of some for-profit institutions, TA is still used at many. This paper utilizes data collected regarding the 2016-2017 academic year from the National Center for Education Statistics' Integrated Postsecondary Education Data System to note trends in TA usage, specifically at for-profit colleges and universities. I also compare TA usage at these institutions to GI Bill usage and note that ultimately there are still strong factors that drive military students to attend for-profit schools despite their reputations. The availability of distance-learning courses and cost of education are statistically significant factors in a student's decision to attend a for-profit institution utilizing TA, showing evidence that these schools are still an attractive option for many military members.

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1. Introduction

The Veterans Administration has recently come under scrutiny for its poor performance in caring for veterans after they have left active duty service. Veterans make up about 14% of the homeless population in the United States,¹ and wait times at veteran hospitals have been excessive to the point where veteran health has been jeopardized. There has been a renewed focus on care for veterans starting with the Obama administration and continuing under the Trump administration. One critical benefit designed to position veterans for careers and future opportunities while serving and after separation is the GI Bill program. In addition to the GI Bill, Department of Defense Tuition Assistance (TA) is available for servicemembers who have not yet separated from their respective branch of service. These programs provide money for undergraduate, graduate, and technical training for veterans, in most cases covering most or all tuition, and, in the case of the Post-9/11 GI Bill, providing a stipend for housing when the member is no longer serving on active duty.

Overall, the education benefits available to veterans have proven to be beneficial in making veterans competitive with their civilian peers, as well as making up for the financial burden and wage loss associated with attending college and delaying a civilian career.^{2,3} These benefits are not only designed to help veterans excel outside the military, but also as retention incentives; they typically require a minimum service period or incur an additional service commitment upon usage of the benefit. Since its passing in 2008, the Post-9/11 GI Bill has

¹ Fargo, Jamison, Stephen Metraux, Thomas Byrne, Ellen Munley, Ann Elizabeth Montgomery, Harlan Jones, George Sheldon, and Dennis Culhane. *Prevalence and Risk of Homelessness among U.S. Veterans: A Multisite Investigation*. Report. National Center on Homelessness Among Veterans, U.S. Department of Veterans Affairs. Accessed February 23, 2019. https://www.va.gov/homeless/docs/center/prevalence_final.pdf.

² Angrist, Joshua. "The Effect of Veterans' Benefits on Veterans Education and Earnings." *ILR Review* 46, no. 4 (July 1993): 637-52. doi:10.3386/w3492.

³ Angrist, Joshua, and Stacey H. Chen. "Schooling and the Vietnam-Era GI Bill: Evidence from the Draft Lottery." *American Economic Journal: Applied Economics* 3 (April 2011): 96-119.

proven to be a powerful incentive for servicemembers, bringing greater usage rates than its predecessor, the Montgomery GI Bill. Still, restrictions on where and how veterans use their benefits have been relatively lax in order to enable veterans to choose from a variety of specialties. At the same time, this ability to utilize benefits at a broad range of institutions has had some negative consequences.

Over the years, there have been countless attempts by various companies, organizations, and institutions to take advantage of veterans and their benefits for financial gain. Examples include loan stores which target military members to apply for loans with high interest rates, mortgage companies attempting to hook veterans in with unnecessary refinancing terms, and for-profit colleges targeting veteran GI Bill users, to name a few. The latter group came under fire under the Obama administration, prompting new legislation limiting the availability of TA and GI Bill benefits to these institutions, though recent legislation rescinds some of these restrictions.⁴ Existing research calls into question the validity of a for-profit college degree, as well as the ways by which these institutions take advantage of various legal loopholes.^{5, 6, 7}

The Department of Education has been reporting statistics on veteran status and GI Bill and TA usage since 2013. Recent trends indicate that usage of GI Bill benefits at for-profit institutions is declining, yet these schools still thrive and continue to target veterans and their money. Additionally, the trends have only noted Post-9/11 GI Bill usage at these institutions and have neglected to consider TA usage. This paper will observe Department of Education data

⁴ Salemm, Christopher J. "Unpatriotic Profit: How For-Profit Colleges Target Veterans and What the Government Must Do to Stop Them." *BYU J. Pub. L.* 89 (2017).

⁵ Patton, Jaclyn. "Encouraging Exploitation of the Military by For-Profit Colleges: The New GI Bill and the 90/10 Rule." *54 South Texas Law Review* 425. (January 2013).

⁶ Raab, F. Dean. "For-Profit Colleges and the GI Bill: A Worthwhile Investment?" Master's thesis, United States Army War College, 2012.

⁷ Riegel, Daniel J. "Closing the 90/10 Loophole in the Higher Education Act: How to Stop Exploitation of Veterans, Protect American Taxpayers, and Restore Market Incentives to the For-Profit College Industry." *The George Washington Law Review* 81, no. 1 (January 2013): 259-291.

from the academic year 2017-2018, comparing GI Bill benefit usage at for-profit institutions to TA benefit usage to determine which factors most strongly influence a person's desire to use his or her benefit at a given for-profit institution.

2. Literature Review

The Department of Defense (DoD) and Veteran's Administration (VA) have sought to maintain high retention standards while simultaneously caring for servicemembers. As a tool to do both, each department offers various educational benefits to Active Duty, Reserve, National Guard, and retired veterans. The key education benefits available to these groups are Tuition Assistance, the Montgomery GI Bill, and the Post-9/11 GI Bill. In 1944, President Franklin D. Roosevelt introduced an initiative to encourage veterans returning from World War II to attend the nation's colleges and universities; this initiative became known as the Serviceman's Readjustment Act of 1944. The program was immensely popular, with veterans accounting for 49 percent of college admissions in 1947.⁸ In 1985, Congress passed legislation to enact the Montgomery GI Bill (MGIB), eligibility for which was relatively limited; an individual needed to elect to participate in the program by committing to a reduction in pay of \$100 for 12 months. He or she had to complete a minimum active duty service commitment, typically three years. Additionally, he or she could not have been commissioned through a military academy or have received a certain amount of ROTC scholarship funds.⁹

The Post-9/11 GI Bill, formally known as the Veterans Educational Assistance Act, was passed by Congress in 2008. It retroactively provided additional benefits to active duty

⁸ Goff, Amanda. "The G.I. Bill: A Case Study in Behavioral Economics." *Policy Perspectives* 25 (May 11, 2018): 42-54. doi:10.4079/pp.v25i0.18349.

⁹ Barr, Andrew. "From the Battlefield to the Schoolyard: The Short-Term Impact of the Post-9/11 GI Bill." *Journal of Human Resources* 50, no. 3 (Summer 2015): 580-613. doi:10.3368/jhr.50.3.580.

servicemembers with service after September 11, 2001.¹⁰ A key component of this most recent bill is the ability of servicemembers to receive a Basic Allowance for Housing (BAH) pay to cover living expenses. Additionally, eligible veterans receive full tuition and fees at any public college or university in their state of residence.¹¹ Another provision of the Post-9/11 GI Bill is the ability of eligible servicemembers to transfer benefits to spouses or children. In order to do this, the servicemember must have served six years of service in the armed forces and agree to serve an additional four years.¹² This has become an attractive option for many servicemembers who plan to serve ten or more years, especially because they are unable to receive the BAH pay while on active duty.

Utilization and Desired Effects

As with any government program designed to stimulate a specific outcome, there have been many studies that have sought to explain the effects (intended and unintended) of these initiatives. Due to the intricacies of the various GI Bills and regular updates that occur to education funding for veterans, these studies have continuously been released and built upon throughout the years. Generally, much of the scholarly research that has been done has centered around whether or not these programs have had the intended benefits for servicemembers, and on what the after-effects of their usage have been.¹³

In addition to retaining members, one of the main goals of veterans' education assistance has been to encourage veterans to attend a college or university while serving on, or upon separation from, the armed forces. In terms of the validity of a subsidy encouraging a potential

¹⁰ Ibid.

¹¹ Goff, "The G.I. Bill".

¹² Dortch, Cassandra. *The Post-9/11 Veterans' Educational Assistance Act of 2008 (Post-9/11 GI Bill): A Primer*. Report. ILR School, Cornell University. September 13, 2017. http://digitalcommons.ilr.cornell.edu/key_workplace.

¹³ See, for example, Angrist (1993), Angrist et al. (2016), Barr (2015), and Turner and Bound (2003).

student to attend a university, there is evidence that this is a sound argument. In general, financial aid has been shown to increase rates of college attendance, specifically among groups that have typically low college attendance.¹⁴ It has also been established that, while many scholarship recipients take longer to complete their degrees, they nonetheless have a higher college attendance and completion rate over the course of five years when compared to non-aid receiving counterparts.¹⁵

Bound & Turner established evidence that the earliest GI Bill of 1944 did in fact correlate to higher educational attainment.¹⁶ They observed within-birth-year educational attainment between World War II veterans and non-veterans, and noted substantial gaps in collegiate education levels. On the other hand, the effects of the post-World War II GI Bill on minority veterans have been mixed depending on where the veteran lives, though they still generally show a positive correlation to GI Bill usage and educational attainment.^{17, 18}

When observing Vietnam-era veterans, similar trends have been noted. When controlling for the draft of the Vietnam War, veterans still had markedly greater schooling gains than non-veterans which can be attributed to GI Bill usage rather than draft-avoidance.¹⁹ Since the passing of the Post-9/11 GI Bill, overall college enrollment has increased by 3 percentage points on average, and the effect was much larger immediately after the Bill's adoption; additionally, enrollment has been consistent and positive especially among older veterans, as older veterans are relatively more responsive to financial incentives. Enrollment effects seem to be consistent

¹⁴ Dynarski, Susan. "Does Aid Matter? Measuring the Effect of Student Aid on College Attendance and Completion." *American Economic Review* 93, no. 1 (February 2003): 279-88. doi:10.3386/w7422.

¹⁵ Angrist, Joshua, David Autor, Sally Hudson, and Amanda Pallais. "Evaluating Post-Secondary Aid: Enrollment, Persistence, and Projected Completion Effects." *National Bureau of Economic Research*, December 2016. doi:10.3386/w23015.

¹⁶ Bound, John, and Sarah Turner. "Going to War and Going to College: Did World War II and the G.I. Bill Increase Educational Attainment for Returning Veterans?" *Journal of Labor Economics* 20, no. 4 (2002): 784-815. doi:10.1086/342012.

¹⁷ Herbold, Hilary. "Never a Level Playing Field: Blacks and the GI Bill." *The Journal of Blacks in Higher Education*, no. 6 (1994): 104. doi:10.2307/2962479.

¹⁸ Turner, Sarah, and John Bound. "Closing the Gap or Widening the Divide: The Effects of the G.I. Bill and World War II on the Educational Outcomes of Black Americans." *Journal of Economic History* 63, no. 1 (2003): 145-77. doi:10.3386/w9044.

¹⁹ Angrist & Chen, "Schooling".

among veterans of all education levels, since the Bill can be used towards undergraduate, graduate, and technical studies. The most recent GI Bill also has shifted the composition of enrollment toward four-year schools, and has encouraged veterans to attend more expensive schools.^{20, 21}

As a retention tool, the Post-9/11 GI Bill may not be the most fiscally ideal choice due to the transferability benefit. Theoretically, because the Bill requires six years of service with a commitment of additional four upon transferring the benefit to dependents, there would be incentive to remain in the armed forces in order to obtain this benefit. However, the costs to the government of providing the GI Bill to the many people who serve the bare minimum required time can outweigh the benefits in manpower obtained from people retained beyond the base ten combined years of service. When this initiative is applied across the board, the Post 9/11 GI Bill is not cost-advantageous to the Services. Instead, the transferability benefit is only cost-advantageous when offered to a population of servicemembers who value transferability more than the actual cost of the Bill; these members are likely to stay in service beyond the minimum commitment.²²

Campus Life and Completion Rates

Overall, veteran education benefits are typically paid directly to the institutions, a process which has improved greatly over time. Transitions for military members to academic environments is a concern for the majority of servicemembers, but the level of academic and career-oriented resources is typically adequate. Nonetheless, there is room for improvement from

²⁰ Barr, "From the Battlefield".

²¹ Zhang, Liang. "Veterans Going to College: Evaluating the Impact of the Post-9/11 GI Bill on College Enrollment." *Educational Evaluation and Policy Analysis* 40, no. 1 (August 04, 2017): 82-102. doi:10.3102/0162373717724002.

²² Lay, Richard. "Applying the Combinatorial Retention Auction Mechanism (CRAM) to a Cost-Benefit Analysis of the Post 9/11 Era GI Bill Transferability Benefit." Master's thesis, United States Naval Postgraduate School, 2009.

most colleges and universities when it comes to these programs. Resources for veterans with disabilities on campus are typically also only considered adequate, but most colleges and universities have improved these programs in recent years.^{23, 24}

When it comes to actual degree completion under the various GI Bills, veteran grade point averages are on par with the national average. These GPAs correlate strongly to academic retention and degree completion, and veterans average 24 credits per academic year, which puts them well within the national average time to earn a bachelor's degree.²⁵

Impact on Earnings

The ultimate goal of any educational aid is to enable a student to not only attend an institution, but to complete his or her degree successfully and in a timely manner, and to obtain adequate employment upon completion. When observing the impact of a college education on earnings, it is well established that the value of an undergraduate or graduate degree is worth the cost and time.²⁶ Veterans, however, must compensate for an earnings loss that occurs when serving in the armed forces due to a lack of civilian work experience.²⁷ In general, despite the increase in schooling brought about by the GI Bills, the benefit received from the GI Bill on earnings is essentially zero when factoring in the earnings loss.²⁸

Usage at For-Profit Schools

²³ Cook, Bryan J., and Young Kim. *From Soldier to Student: Easing the Transition of Service Members on Campus*. Report. Lumina Foundation for Education. July 2009.

²⁴ Steele, Jennifer L., Nicholas Salcedo, and James Coley. *Military Veterans' Experiences Using the Post-9/11 GI Bill and Pursuing Postsecondary Education*. Publication. November 2010. <https://www.rand.org/pubs/monographs/MG1083.html>.

²⁵ Lang, Wendy A., and John T. Powers. "Completing the Mission: A Pilot Study of Veteran Students' Progress Toward Degree Attainment in the Post 9/11 Era." The Pat Tillman Foundation, 2011.

²⁶ James, Estelle, Nabeel Alsalam, Joseph C. Conaty, and Duc-Le To. "College Quality and Future Earnings: Where Should You Send Your Child to College?" *The American Economic Review* 79, no. 2 (May 1989): 247-252.

²⁷ Angrist, "The Effect of Veterans' Benefits".

²⁸ Angrist & Chen, "Schooling".

There has been a long-standing debate regarding the predatory practices of many for-profit institutions on veterans. Often, for-profit colleges are among the lowest performing in the United States and maintain some of the lowest graduation rates in addition to some of the highest tuition rates.²⁹ Additionally, graduates of for-profit schools are less likely to obtain employment after graduation, and are also paid significantly less than their counterparts who obtained similar degrees from non-profit colleges and universities. For-profit college graduates are also therefore likely to have higher debt-to-income burdens, further questioning the true value of these institutions.³⁰

A statute called the 90/10 rule, which dictates that for-profit institutions are required to obtain at least 10% of their income from other than Title IV federal student financial aid, exists to protect students from attending some of these high-risk institutions using federal aid. However, because of the fact that the GI Bills and Tuition Assistance are not considered Title IV federal aid, for-profit institutions are incentivized to enroll as many servicemembers as possible in order to obtain more revenue from other students utilizing Title IV aid; in fact, using this loophole, many of these institutions obtain nearly 100% of their funding from the federal government.^{31, 32, 33}

The methods by which for-profit institutions recruit students are typically through aggressive marketing, touting their degrees as an affordable, career-driven, and legitimate alternative to a traditional institution. A Government Accountability Office investigation in 2010 uncovered fraudulent practices at several for-profit institutions, leading to a 2012 Executive

²⁹ Riegel, "Closing the 90/10 Loophole".

³⁰ Cellini, Stephanie Riegg, and Nicholas Turner. "Gainfully Employed? Assessing the Employment and Earnings of For-Profit College Students Using Administrative Data." *National Bureau of Economic Research*, May 2016. doi:10.3386/w22287.

³¹ Patton, "Encouraging Exploitation".

³² Raab, "For-Profit Colleges and the GI Bill".

³³ Riegel, "Closing the 90/10 Loophole".

Order setting standards for any institution receiving funds through veteran assistance programs. However, further legislation has since been passed which loosens regulations on the for-profit education industry.³⁴

For-profit institutions tend to increase their tuition rates when the amount of GI Bill benefit and Department of Defense Tuition Assistance (TA) money available increases, a trend which has been noted in recent research.³⁵ Recently, there has actually been a trend of GI Bill usage declining slightly at for-profit institutions. However, there is a significant understatement of revenue at these institutions because the Department of Veterans Affairs only reports tuition payments for the Post-9/11 benefit, excluding other benefits. Additionally, Department of Defense Tuition Assistance usage has not been observed in these recent studies.³⁶ Because of the fact that TA seems to be a neglected data point when looking at veteran education practices, this capstone will focus on the recent trends in not only GI Bill usage, but also TA utilization at for-profit institutions to get a better understanding of whether or not these schools are truly losing veteran students and their money.

3. Data and Methods

In order to observe which variables effect TA usage at for-profit schools, data was extracted from the National Center for Education Statistics (NCES). Each year, the NCES conducts a thorough postsecondary education survey and collects all the data in a database called the Integrated Postsecondary Education Data System (IPEDS). The data for this analysis came

³⁴ Salemm, "Unpatriotic Profit".

³⁵ Baird, Matthew, Michael Kofoed, Trey Miller, and Jennie Wenger. "For-Profit Higher Education Responsiveness to Price Shocks: An Investigation of Changes in Post 9-11 GI Bill Allowed Maximum Tuitions." *SSRN Electronic Journal*, 2018. doi:10.2139/ssrn.3174763.

³⁶ Ochinko, Walter, and Kathy Payea. *For-Profit Schools' Post-9/11 GI Bill Revenue and Enrollment Declined from 2014 to 2016*. Report. Veteran's Perspective Issue Brief no 3, Veterans Education Success. April 2018.

from the IPEDS tables, narrowed down to for-profit schools in the year 2017; this was the most recent year with complete data at the time of this capstone.

These surveys contain hundreds of potential variables on institution properties, financial aid, costs, and employee makeup, to name a few. In order to retain a large dataset while keeping the analysis manageable, only a few key variables were used. The dependent variable to be observed was amount of Tuition Assistance used, in dollars, for graduate and undergraduate students combined. The goal is to observe trends in TA amounts used at each for-profit institution based on a few key independent variables. The independent variables included graduation rate for the total cohort, tuition, sector ID (with a 1 being assigned to less than two-year institutions, a 2 being assigned to two-year institutions, and a 3 being assigned to four year or above institutions), and percentage of courses offered completely by distance learning.

These independent variables were deemed most important for several reasons. Graduation rate is commonly used as a key indicator of educational success, both in regard to student success and institutional success. Tuition was chosen to observe whether schools with higher tuition were commanding greater amounts of TA, or whether they tended to adjust their tuition to maximum TA amounts in order to increase enrollment. Sector ID was vital in determining where students are using their TA, since amount of schooling often corresponds to increases in earnings, one of the many key factors in determining educational success. Finally, percentage of courses offered via distance learning is an important factor in the ability to use TA, as military members are constantly required to deploy and move around the globe.

Summary statistics can be seen in Appendix A, Tables 1 through 6 and Figures 1 through 4. In general, the amount of TA used at these for-profit institutions varied widely. The vast majority of institutions reported no TA used at all. To handle this, all NAs and zero values were

removed. The resultant dataset had the lowest institution receiving \$30 of TA, and the highest receiving \$91,229,471. At schools with higher amounts of TA being used, graduation rates were low, and appeared to be significantly below the national average of about 60% (Figure 1). Many schools with high amounts of TA received offered the majority of their courses completely online, something that makes sense for military members who tend to move frequently (Figure 2). Tuition was relatively low when TA usage was high (Figure 3), and most TA users attended four year or above institutions (Figure 4). To determine which variables are statistically significant in regard to amount of TA used, chi squared and goodness of fit tests were run on the data to observe independence, data was transformed using a logarithmic transformation, and then a multiple regression was utilized.

4. Results

Chi squared tests were conducted to determine whether the independent variables were in any way influencers on the dependent variable. The independent variables, x_i , were tested against the dependent variable, Y (Tuition Assistance amount used in dollars):

$$H_a: Y \text{ is not independent of } x_i$$

$$H_0: Y \text{ is independent of } x_i$$

Evidence of variable dependence was limited, with all cases except for one showing independence at the 95% confidence interval (Table 7). In the case of the distance courses variable, it can be seen that it is not independent from TA amount with a chi squared value of 14,156 and a p-value of 0.0005175. A follow up correlation test showed a t-value of 3.2499, with a p-value of 0.001336 (Table 8). In the case of distance courses, I would reject the null hypothesis that the variables are independent at the 95% confidence interval and confirm the chi-

squared test. Excluding distance course offerings, in all other cases I failed to reject the null hypothesis and conclude that the variables are independent.

Of note, GI Bill amount was significant at the 90% confidence interval. This points to evidence that there could be some relationship between TA usage and GI Bill usage. Reasons for this could be numerous, but given many schools' military-friendly marketing tactics, it is plausible that schools which target military members would have increased intake of TA and GI Bill monies. Additionally, the military allows a top up option, whereby TA would pay for the difference in tuition not covered by the GI Bill. It is also possible that these institutions offer on-base recruiting and course offerings, and tuition tactics which target exact amounts of TA and GI Bill usage allowed per credit. Institutions would then enable intake of maximum TA and GI Bill allowances per student in a process that resembles tuition manipulation. Such in-depth studies of TA and GI Bill correlation to tuition are beyond the scope of this project, but can be observed in future literature.

When observing data distribution, the majority of the variables were not normally distributed. To make regression computations faster, all data was transformed using a logarithmic transformation; the regression results can be seen in Table 9, with hypotheses listed below:

H_a : There is a statistically significant association between x_i and Y

H_0 : There is no statistically significant association between x_i and Y

The model residuals are fairly symmetrical around the mean, which hints that this model fits the data fairly well. As far as the variables are concerned, tuition and distance course offerings are two variables that are statistically significant at the 99% confidence interval in the regression.

Overall, it can be seen that an increase in the use of TA actually equates to a slight decrease in the overall tuition at an institution. This could, as mentioned above, hint at tuition manipulation at these institutions; they know what the TA limits are per credit, and lower their tuition accordingly to meet these amounts. It also shows that schools may not be raising their tuition rates just because they are receiving more TA, which could potentially have a negative impact on the number of TA users at an institution.

Also of note is the trend showing that TA amount increases with an increase in the percentage of distance courses offered. This is not entirely surprising, since military members currently on active duty might see distance courses as more attractive options given their frequent deployments. For senior military officers and lawmakers considering options to reduce the amounts of TA used at for-profit institutions, one potential option is to offer on-base courses from non-profit schools, and allotting time for members to attend these courses during the week while they are at home. This could mimic the convenience offered by distance courses, while creating a structured environment that allows military members to obtain a valuable education. From a statistical standpoint, there is no doubt that there is a significant link between amount of TA used at these for-profit institutions and the percentage of distance courses offered, and the null hypothesis can be rejected.

It is important to note that these results came from data which omitted all schools that receive zero dollars in TA. When running the same analysis with the schools receiving zero TA included, every variable was shown to be statistically significant at the 99% level; additionally, chi squared tests showed that none of the variables was independent from the dependent variable. Upon closer inspection of the data, it appeared that because the number of zero-TA schools was so huge, the resulting model was skewed. A plot of residuals versus fitted data showed a

significant number of outliers, which imply that the model is not a good fit for the data to begin with, even after transforming the data. Therefore, the model including zero-TA schools and its results were omitted from this analysis.

Figure 5 shows resulting plots from the regression on the data from schools receiving greater than zero TA dollars. The Residuals vs Fitted plot and Scale-Location plot give a visual indication that the model is relatively accurate, with deviations ranging between -6 and +4. The Q-Q plot displays only a slight curve up at the end, indicating that the distribution is mostly normal; this is largely due to the log transformation that was performed, since the raw data did not follow a strict normal distribution. Finally, the outliers that do exist are relatively immaterial when it comes to the model, as can be seen in the final plot of Residuals vs Leverage. Here, there are few extreme values, with the line for Cook's distance not appearing in the plot.

As a comparison, when using GI Bill amounts as the dependent variable with the same independent variables, graduation rate and distance course offerings were statistically significant at the 90% confidence interval, and tuition and sector ID at the 99% confidence interval. The major findings here are twofold. First, there are numerous factors that contribute to a person's use of GI Bill money at an institution, but all of those observed clearly have some correlation. Second, those using TA appear to place more emphasis on distance course availability and tuition alone rather than graduation rate and sector ID when compared with GI Bill users. This is likely because TA users are on active duty, which means they may feel pressure to simply obtain a degree in the cheapest and most convenient way possible. GI Bill users have much more spending power available, and, due to the housing allowance available only when not serving on active duty, many choose to wait until they have completed their service to utilize the benefit, meaning that they potentially have more flexibility to attend school. Additionally, dependents

can utilize the GI Bill, offering another demographic which would potentially mirror that of a typical group of college-aged students.

Finally, it is worth noting that sector ID is much more significant here than in the TA group. The estimate for sector ID was 5.84, meaning that an increase in GI Bill dollars spent correlates to an increase in sector ID—in other words, more money is spent at four-year institutions than less than four-year institutions, which is a finding that would make sense. The real significance comes when noting that for TA amounts, the estimate for sector ID is not significant at 0.51588, which means that more dollars spent does not necessarily equate to as significant of an increase in sector ID. TA users may be spending more money, relatively speaking, to attend less than four year institutions than GI Bill users, pointing to a potentially predatory practice.

5. Conclusion

Despite a slight downtick in GI Bill money going to for-profit institutions in recent years, there is still a significant amount of Department of Defense Tuition Assistance money funneling into these schools. One of the most important noted trends is the low graduation rates of TA users at these institutions. When considering the fact that distance course offerings were also high, it is possible that students taking distance classes find it harder to stay in a program until the end, with a lack of on-campus resources. To combat this, policymakers should consider offering in-person courses on military bases which offer structure and access to professors and counselors. Given the fact that TA and GI Bill amounts used at a given institution are not independent, policy changes that were made regarding GI Bill usage at for-profit schools should also be considered for TA.

Consideration should be given to observing tuition manipulation by these institutions. Increasing the TA allowances per credit seems unnecessary, since many institutions will simply adjust what they charge to this amount. Further studies are necessary to observe trends at the schools which receive the highest amount of TA dollars yet still charge a relatively low amount of tuition per credit. These thin profit margins seem to work well with such a high quantity of TA users, and it is worth studying these schools to determine whether students are graduating on time and with a usable degree; if not, policymakers should consider capping the total amount of TA an institution is allowed to take in. A potential course of action would be to close the 90/10 loophole by considering TA part of the 10% of Title IV aid rather than fall within the 90% of non-Title IV aid.

Overall, the biggest factors that influenced an institution's amount of TA intake were distance course offerings and tuition. A few suggestions have already been made for how to handle these biases, although future research should consider other variables not included in this work in order to prevent omitted variable bias. Ideally, an in-depth study of postgraduate success should be conducted before major policy changes occur in order to observe the true quality of the degrees being received. Variables to consider include post-graduate income, employment rates, and job placement upon separation, as well as job opportunities obtained while still on active duty.

Given that distance education is so critical to military members utilizing TA, it is worth observing the quality of these degrees, and then comparing those obtained through non-profit institutions with those obtained through for-profit institutions. This paper explored the latter, but a side-by-side comparison of degree quality similar to the one described above, looking strictly at those people who obtained their degrees completely online, would be useful in determining

whether TA is meeting the mark. Ultimately the Department of Defense should consider whether it values these education benefits more as a retention tool or a way to improve the education and well-being of its employees. If the numbers show TA users are more likely to stay in the military longer than non-TA users, then perhaps the DoD is getting exactly what it wants out of the program. Still, there ought to be a way to achieve both retention and educational quality, as the two are likely correlated; those who feel more satisfied in their education choices will ultimately be happier employees who might choose to stay in their respective branch of service longer. Regardless, if the benefits are being utilized, the Department ought to ensure that servicemembers are getting the highest quality education for the money.

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Appendix A: Summary Statistics and Graphs

Summary Statistics, Total Amount of GI Bill Money Used per Institution					
Min	1st Quartile	Median	Mean	3rd Quartile	Max
0	230,992	717,408	3,725,599	2,324,369	95,180,479

Table 1

Summary Statistics, Total Number of TA Users per Institution					
Min	1st Quartile	Median	Mean	3rd Quartile	Max
1	2	5	425.5	21	44,811

Table 2

Summary Statistics, Total Amount of TA Money Used per Institution					
Min	1st Quartile	Median	Mean	3rd Quartile	Max
30	4,290	11,410	864,668	56,134	91,229,471

Table 3

Summary Statistics, Graduation Rate per Institution					
Min	1st Quartile	Median	Mean	3rd Quartile	Max
0	18	33	38.13	57	100

Table 4

Summary Statistics, Percentage of Courses Offered Via Distance Learning					
Min	1st Quartile	Median	Mean	3rd Quartile	Max
0	0	17	35.22	73	100

Table 5

Summary Statistics, Yearly Tuition					
Min	1st Quartile	Median	Mean	3rd Quartile	Max
3996	12,090	15,000	15,589	17,316	51,850

Table 6

Amount of TA Used vs Graduation Rate

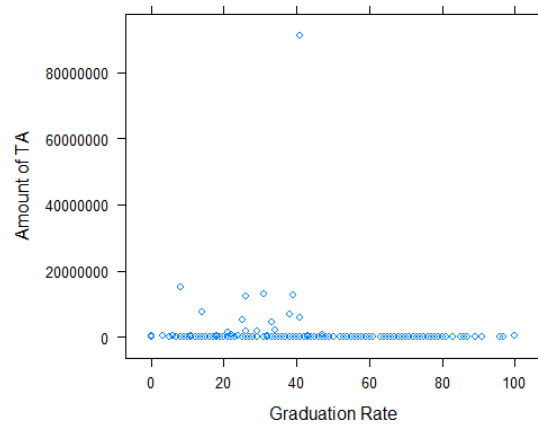


Figure 1

Amount of TA Used vs Percentage Distance Courses

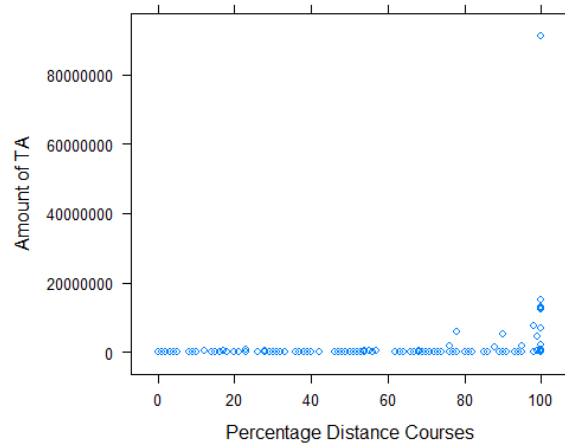


Figure 2

Amount of TA Used vs Tuition

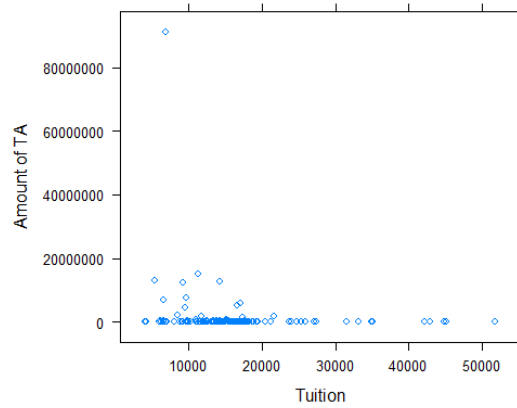


Figure 3

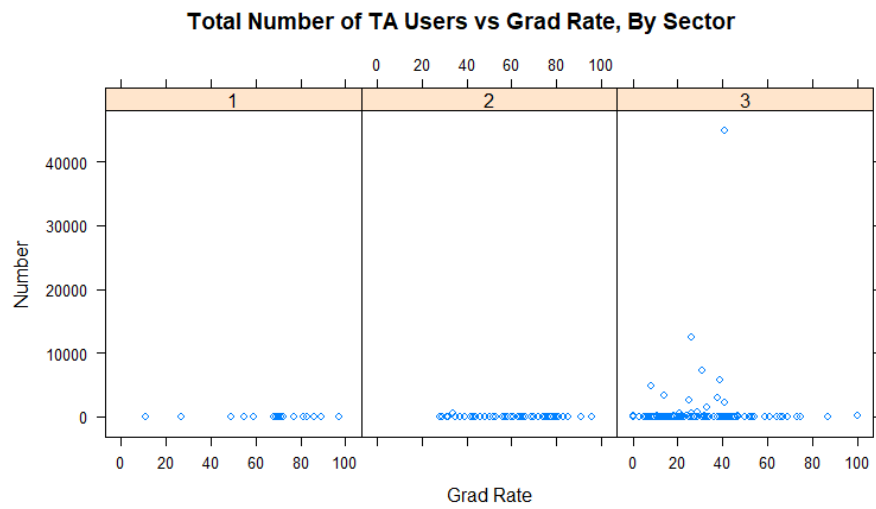


Figure 4

Appendix B: Regression Results

Pearson's Chi-Squared Test Results		
Amount TA vs Amount GI Bill		
X Squared	Degrees Freedom	P-value
40655	40257	0.08081
Amount TA vs Tuition		
X Squared	Degrees Freedom	P-value
27094	27027	0.3861
Amount TA vs Graduation Rate		
X Squared	Degrees Freedom	P-value
15770	15876	0.7228
Amount TA vs Sector ID		
X Squared	Degrees Freedom	P-value
352.01	378	0.8273
Amount TA vs Distance Courses		
X Squared	Degrees Freedom	P-value
14156	13608	0.000518

Table 7

Correlation Test, Amount TA vs Distance Courses			
T Value	Degrees Freedom	P-value	Correlation Factor
3.2499	219	0.001336	0.2144952

Table 8

Regression Results					
Residuals					
Min	First Quartile	Median	Third Quartile	Max	
-4.7473	-1.2416	-0.1846	0.8569	6.3739	
	Estimate	Std Error	T Value	P Value	Significance
Intercept	19.16171	3.36231	5.699	3.92E-08	99% Level
Tuition	-1.18998	0.34326	-3.467	0.00064	99% Level
Sector ID	0.51588	0.80523	0.641	0.52242	N/A
Graduation Rate	0.10982	0.12193	0.901	0.36875	N/A
Distance Courses	0.47299	0.08298	5.7	3.90E-08	99% Level

Table 9

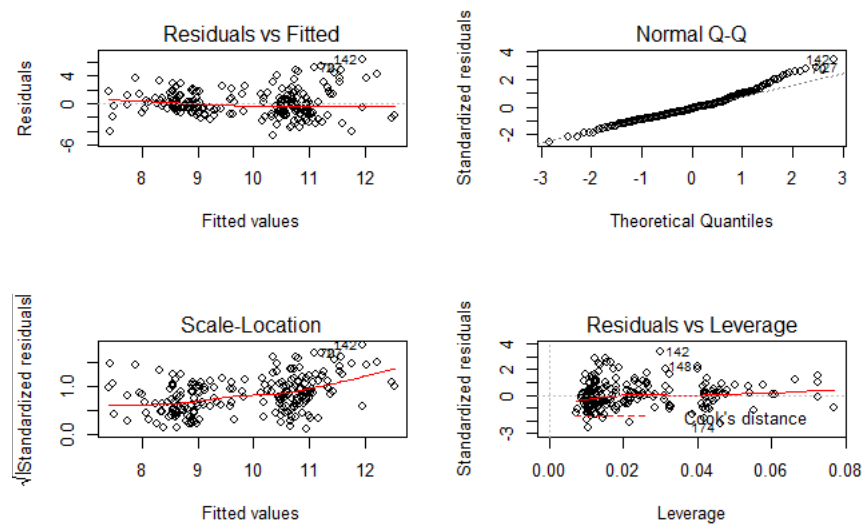


Figure 5

Curriculum Vita

Michael Chimienti was born in Tinley Park, Illinois in 1989. He earned a Bachelor of Science degree in Computational Mathematics from Marquette University, graduating Magna Cum Laude in 2012. Since 2012 he has worked as an Officer in the United States Air Force, earning his pilot wings at Vance Air Force Base, Oklahoma in 2014. Since then, he has been stationed at Andrews Air Force Base, Maryland and Travis Air Force Base, California, as a mobility pilot flying the C-21 and C-5. He is currently a Captain on Active Duty living in Sacramento, California. He has an interest in veterans' affairs and a desire to work in a staff position involving data analytics for the Department of Defense. He will complete his Master of Science in Government Analytics from Johns Hopkins University in May 2019.